Since that time the varieties of garden beans have greatly increased in Europe and the United States. All of the leading varieties of America and Europe were cultivated at the Missouri Botanical Garden, so that the growth and seed characters were used in the descriptions. The garden beans are grouped under the following genera: Phaseolus, Dolichos, Vigna, Glycine, and Vicia. The author gives a short account of the origin, uses, methods of culture, with a brief account of *Bruchus obsoletus* and *Colletotrichum lagenarium*, *Uromyces phaseoli*, and *Phytopthora phaseoli*. Three species of the genus Phaseolus are described, *P. lunatus*, *P. vulgaris*, and *P. multiflorus*. The greatest number of varieties are listed under *P. vulgaris*. Dolichos is represented by *D. lablab* and *D. sesquipedalis;* Vigna is represented by *V. catjang;* Glycine by *G. hispida*, of which five garden varieties are listed, but this does not by any means comprise all of the varieties, as they are numerous in Japan and China, where the species has long been cultivated. The genus Vicia is represented by a single species, *V. faba*.

An excellent feature of the paper is the full citation of the literature of the genus as well as that of the species, no pains having been spared to verify references. The half-tone plates accompanying the paper greatly aid in the botanical study of the garden beans. The excellent keys for garden varieties also help to facilitate the determination of the garden forms. This is one of the most important contributions to horticultural literature in this country. In point of thoroughness it is like his paper on Capsicum published a few years ago in one of the earlier reports of the Garden. It is a model of excellence in every way, and it may well serve as a guide for much of the erratic work carried on in this country in listing varieties and describing the same.

The work carried out by the author is one that has long been neglected in this country. Mr. Irish is fortunate in having had at his disposal not only a large amount of material,—and such work can only be undertaken where this is at hand,—but also a good reference library, combined with acute judgment in discriminating between the puzzling garden forms.

L. H. PAMMEL.

Pfeffer's Plant Physiology. — Pfeffer's[1] revision of his *Pflanzenphysiologie* has been so thorough and so time-consuming that only the

[1] Pfeffer, W. *Pflanzenphysiologie. Handbuch der Lehre vom Stoffwechsel und Kraftwechsel in der Pflanze.* 2. Auflage. Leipzig, Engelmann, 1901. Bd. ii. 1. Hälfte.

first half of Vol. II has been made ready for publication. This first part appeared last summer. The first volume, reviewed in this journal (Vol. XXXII, pp. 450, 451, 1898), treated the subjects comprehended under metabolism. The first half of the second volume discusses growth and the factors that control it, development, variation, and inheritance — in short, different kinds of work done by the plant, dependent upon and made possible by the processes discussed in the earlier volume. In a book planned as this is, with the first volume devoted to the transformation of matter and the second to the transformation of energy, more or less repetition is necessary, but it is a repetition which gives to Pfeffer's treatment of the subjects in plant physiology the exhaustiveness which the physiologist needs. This is no book to be put into the hands of undergraduates; it is for the man who has studied long and is studying hard. However much one may wish that Pfeffer's literary style were not so difficult, one cannot help recognizing that it is full of meaning.

The arrangement of matter in Vol. II of the second edition differs somewhat from the first edition; consequently comparison of the two editions as to size is difficult. One sees at once, however, that if the second half of the volume is to treat the subjects of movements and the production of heat, light, and electricity in anything like proportional fullness, the book will be considerably larger than in the first edition. The additions to the first part are many of them the results of Pfeffer's own work, either investigation or teaching. This will be equally true of the second part of the volume.

Such a work as this, presenting the status of a science as a whole, shows where the great gaps in our knowledge are. For instance the plant physiology of to-day consists of the facts discovered in studying land and fresh-water plants, and of the interpretations of these facts. Indeed, the fresh-water algæ have taken only a minor place as subjects of physiological inquiry, so that we have to-day a physiology interpreted by too many in terms applicable to land plants only. The laboratory guides carry this to the extreme, but they show how one-sided our knowledge is. Pfeffer's book can contain only a few references to the marine algæ. I am convinced that the careful physiological study of marine plants, though such study may reveal no new principles, will modify and correct many of the conceptions prevailing to-day. The status of the science is satisfactory, but there is room for much more research.

G. J. P.